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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,979	04/11/2006	Minoru Suezaki	2006_0007A	7303

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EXAMINER	
RAMIREZ, ARMANDO P	
ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,979	SUEZAKI ET AL.	
	Examiner	Art Unit	
	ARMANDO P. RAMIREZ	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/17/2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) *10-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :03/16/2006, 07/03/2006, 12/08/2006, 12/08/2006.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, Claims 1-9 in the reply filed on 12/17/08 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Newly amended dependent Claim 10 (non-elected from original groups) is directed to depend upon Claim 1, an invention that is independent or distinct from the invention originally claimed for the following reasons: The recitation, "A curable resin composition for a column spacer to be used for producing a column spacer according to claim 1," is merely one of intended use, and as such Claim 10 remains as originally presented and separate from Group 1, Claims 1-9. Therefore, **Claim 10, and Claims 11-27 (Group II) are withdrawn from further consideration as being directed to a non-elected invention.**

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in United States on 04/11/2006. It is noted, however, that applicant has not filed certified copies of the following

(30) Foreign Application Priority Data				
Feb. 10, 2004	(JP)	2004-034132	Sep. 21, 2004	(JP) 2004-274265
Feb. 10, 2004	(JP)	2004-034133	Sep. 21, 2004	(JP) 2004-274266
Sep. 14, 2004	(JP)	2004-267487	Sep. 24, 2004	(JP) 2004-278486
Sep. 14, 2004	(JP)	2004-267488	Dec. 24, 2004	(JP) 2004-374300
Sep. 21, 2004	(JP)	2004-274263	Dec. 27, 2004	(JP) 2004-377658
Sep. 21, 2004	(JP)	2004-274264	Jan. 5, 2005	(JP) 2005-000816
			Publication Classification	

applications as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (US 2003/0118922 A1).

Hayashi teaches with respect to Claim 1, the claimed column spacer (Figure 2, Item 12, and 0073, and 0222) for maintaining a gap between two glass substrates (*see at least 0189*) at a constant distance in a liquid crystal display element (*Abstract, lines 1-15*), but does not specifically teach the claimed elastic modulus of 0.2 to 1.0 GPa in compressing by 15% at 25 °C.

Hayashi, however, teaches that "The elastic deformation modulus "(elastic deformation quantity/total deformation quantity) x 100" of the spacers is 60% or more against a compressive load of 2.0 GPa at room temperature." (0064, also see at least 0029, 0054, 0081, 0358, and 0359). Hence, since there is recognition of this feature in the art, the elastic deformation modulus of the spacers is a result-effective variable that is subject to routine experimentation for the purpose of providing the desired rigidity and mechanical strength to the liquid crystal display.

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the spacers with respect to the concentration of the cross-linking agent in order to provide the invention of Hayashi with the desired elastic modulus, thereby increasing the durability of the optical film and ultimately the image display device.

"Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

With respect to Claims 2-3, Hayashi teaches the invention set forth above, but does not specifically teach the claimed column spacer, wherein an elastic modulus in compressing by 15% at 60 ^{o}C is 0.13 to 0.65 GPa, and at 120 ^{o}C is 0.1 to 0.5 GPa.

Hayashi, however, as discussed above teaches the elastic modulus of the claimed spacers at room temperature, considered by those of ordinary skill in the art to be 25 ^{o}C. Considering that the spacers are designed for a liquid crystal display element, at the time of the invention, it

would have been obvious to one of ordinary skill in the art to have measured the elastic modulus at a temperature of 60 °C, and also at a temperature of 120 °C, in order to obtain elastic modulus data at different operational temperatures, i.e. Power OFF (25 °C), Power ON (approximately 60 °C), and Power ON under a hot environment (120 °C).

The motivation would be to tune the degree of cross-linking of the curable resin (*Abstract, line 6*) by monitoring the elastic modulus at the aforementioned temperatures in order to obtain the desired compression values as required for the protective properties of the spacers.

With respect to Claim 4, Hayashi teaches the invention set forth above, but is silent about the claimed column spacer, wherein a rate of change of the elastic modulus in the fifth compression relative to the elastic modulus in the first compression is 5% or less when a compression test of compressing by 15% at 25 °C is performed repeatedly.

Hayashi, however, uses like materials in a like manner as claimed, it would therefore be expected that the spacers will have the same characteristics claimed, particularly the claimed rate of change of the elastic modulus. Alternatively any minor differences in the methods of forming resulting in slight variations to the rate of change of the elastic modulus would have been obvious (see MPEP 2113). It is held that once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

With respect to Claim 5, Hayashi teaches the invention set forth above, but does no specifically teach the claimed column spacer, wherein an initial compression elastic modulus E_{25}

in compressing by 15% at 25 °C and a compression elastic modulus E_{120} in compressing by 15% at 25 °C after compressing by 15% at 120 °C satisfy the relationship of the following equation (1):

$$[(E_{120}-E_{25})/E_{25}] \times 100 \leq 10 \quad (1).$$

Hayashi, however, uses like materials in a like manner as claimed, it would therefore be expected that the spacers will have the same characteristics claimed, particularly the claimed elastic modulus equation. Alternatively any minor differences in the methods of forming resulting in slight variations to the elastic modulus equation would have been obvious (see MPEP 2113). It is held that once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

With respect to Claim 6, Hayashi teaches the invention set forth above, but does not specifically disclose the claimed column spacer, wherein a rate of recovery in deforming by compressing by 15% at 25 °C is 70% or more.

Hayashi, however, teaches using essentially the same disclosed materials and sizes for the spacers as the instant application (see at least 0026-0049, Formulas (4) through (6) as well as Pages 19 and 24 of the specification of the instant application).

Therefore, since the spacers of Hayashi must have essentially the same physical characteristics as the spacers of the instant application, it would be expected that the spacers as

taught by Hayashi will have essentially the same rate of recovery in deforming by compressing by 15% at 25 °C of 70% or more.

With respect to Claim 7, Hayashi teaches the claimed liquid crystal display element obtained by using the column spacer according to claim 1 (*Title, and also see at least Figures 1 and 2*).

6. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama (US 6,507,385).

Nishiyama teaches with respect to Claim 8, the claimed column spacer (*Abstract, line 15*) for maintaining a gap between two glass substrates at a constant distance (*Col. 4, lines 12-17*) in a liquid crystal display element (*Title*), but does not specifically teach the claimed coefficient of linear expansion of 1 x 10^{-4} to 5 x 10^{-4}/°C at a temperature range of 25 to 100 °C.

Nishiyama, however, teaches that "In Embodiment 1, the coefficient of linear expansion of the spacer **3** is 7.0 to 10.0 x 10^{-5} (1/K) and the coefficient of linear expansion of a liquid crystal material of the liquid crystal layer **4** is 7.0 x 10^{-4} (1/K. An increase in the internal pressure of the liquid crystal layer **4** by heating depends on the expansion of the liquid crystal molecule." (*Col. 12, lines 36-42*). Nishiyama, also teaches the temperature relation of the spacer (*Col. 13, lines 45-52*). Hence, since there is recognition of this feature in the art, the coefficient of linear expansion of the spacers is a result-effective variable that is subject to routine experimentation for the purpose of providing the desired rigidity and mechanical strength to the liquid crystal display.

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to have modified the spacers with respect to the concentration of the cross-linking agent in order to provide the invention of Hayashi with the desired coefficient of linear expansion, thereby increasing the durability of the optical film and ultimately the image display device.

"Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

With respect to Claim 9, Nishiyama teaches the claimed liquid crystal display element obtained by using the column spacer according to claim 8 (*Title, Abstract line 1, plus additional examples therein*).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura (US 6,582,862 B1) teaches spacers made of acryl copolymers and JP, 2003-316001, A, also teaches acryl copolymers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO P. RAMIREZ whose telephone number is (571)270-7083. The examiner can normally be reached on Mon - Thur (4/5/9).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571)272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Supervisory Patent Examiner, Art Unit 1794

/A. P. R./